

WHAT IS CLAIMED IS:

1. A method of distributing a program in a network gateway, for distributing, to nodes connected to a network that is in turn connected to a data communication network through the gateway, a program to be operated on each node, wherein

5 to said large scale data communication network, a program distribution site holding said server program and a client program necessary for communication with a server using the server program, and having a function of distributing, upon request, a requested program to a node that has issued said request is connected;

10 said method of distributing a program in the network gateway comprising the steps of:

preparing a management table storing management information for each of the nodes connected in said network;

15 receiving, from a new server starting provision of a service on said network, management information related to said new server;

updating management information related to said new server;

in response to reception of said management information from said new server, updating said management table;

20 in response to reception of said management information from said new server, requesting transmission of a server program for said new server and a client program for a client receiving said new service, to the program distribution site specified by said management information;

25 storing the server program and the client program transmitted from said program distribution site in response to said request in a storage provided in association with said gateway;

transmitting the server program stored in said storage to said new server; and

30 in response to a transmission request of a client program for communication with said new server from a node connected to said network, specifying a necessary client program by making a reference to said management table, and transmitting said client program stored in said

storage to the node that issued said transmission request.

2. The method of distributing a program in a network gateway according to claim 1, wherein said step of transmitting said server program to said new server includes the step of

in response to reception of said server program from said program distribution site, transmitting said server program to said new server.

3. The method of distributing a program in a network gateway according to claim 1, wherein said step of transmitting said server program to said new server includes the step of

transmitting, in response to reception of a distribution request of said server program from said new server, said server program to said new server.

4. The method of distributing a program in a network gateway according to any of claim 1, wherein

a plurality of said program distribution sites are connected to said data communication network;

said step of requesting said transmission includes the step of inquiring, in response to reception of said management information from said server, a program distribution site of which position information on the network with respect to said gateway satisfies a predetermined condition, to one or a plurality of program distribution sites specified by said management information, among said plurality of program distribution sites, said one or a plurality of program distribution sites having a function of specifying and notifying to said gateway a program distribution site of which position information on the network with respect to said gateway satisfies said predetermined condition;

said method further comprising the step of requesting, to the program distribution site notified to said gateway as the one of which position information on the network with respect to said gateway satisfies said predetermined condition, transmission of a server program for said new

server and a client program for the client receiving said new service.

5. The method of distributing a program in a network gateway according to any of claim 1, wherein

a plurality of said program distribution sites are connected to said data communication network; and

5 said step of requesting said transmission includes the steps of
in response to reception of said management information from said server, obtaining position information on the network of one or a plurality of program distribution sites specified by said management information among said plurality of program distribution sites,

10 selecting, from said one or a plurality of program distribution sites, a program distribution site of which position information on said network satisfies a predetermined condition, and

15 requesting, to the program distribution site selected as the position information on said network of which satisfies the prescribed condition, transmission of a server program for said new server and a client program for the client to receive said new service.

6. The method of distributing a program in a network gateway according to any of claim 1, wherein

said program distribution site holds a plurality of programs for an application; and

5 said step of requesting said transmission includes the steps of
in response to reception of said management information corresponding to said application from said server, obtaining program information of said plurality of programs from said program distribution site,

10 specifying a program to be received, based on the program information of said plurality of programs received from said program distribution site, and

requesting, to said program distribution site, transmission of the program selected as the server program for said new server, and the

15 program selected as the client program for the client to receive the new service.

7. The method of distributing a program in a network gateway according to any of claim 1, wherein

said program distribution site holds a plurality of programs for an application;

5 said step of requesting said transmission includes the steps of responsive to reception of said management information corresponding to said application from said server, obtaining, from a node that will be a client, management information of the node, and transmitting the management information of the node that will be
10 said server, and management information of the node that will be the client to said program distribution site, said program distribution site having a function of specifying and transmitting to said gateway, a program to be transmitted to each node among said plurality of programs, based on the management information of the node that will be the server and
15 management information of the node that will be said client; and

said step of storing said program in said storage includes the step of storing the server program and the client program selected by said program distribution site based on the management information of the node that will be the server and the management information of the node that will be said
20 client and transmitted to said gateway, in a storage provided in association with said gateway.

8. A method of distributing a program using a network gateway, for distributing a program to nodes connected to a network that in turn is connected to a data communication network through the gateway, a program to be operated on each node, wherein

5 a program distribution site holding said server program and a client program necessary for communication with a server using said server program, and having a function of distributing, upon request, a requested program to a node that issued said request is connected;

said method of distributing a program using a network gateway includes the steps of:

- preparing a management table storing management information for each of the nodes connected to said network;
- receiving, from a new server starting provision of a service on said network, management information of said new server;
- in response to transmission of said management information from said new server to said gateway, updating said management table;
- in response to reception of said management information from said new server, requesting transmission of program information of a server program for said new server and a client program for a client that receives said new service, to a program distribution site specified by said management information;
- storing the program information of the server program and the client program transmitted from said program distribution site in response to said request in a storage provided in association with said gateway;
- transmitting the program information of the server program stored in said storage to said new server; and
- in response to a transmission request of the program information of the client program for communication with said new server, specifying from a node connected to said network, a necessary client program by making a reference to said management table, and transmitting the program information of said client program stored in said storage to the node that transmitted said transmission request;
- whereby at said new server and the node receiving the program information of said client program, it becomes possible to determine whether the server program and the client program are to be obtained from said program distribution site or not, respectively.

9. The method of distributing a program in a network gateway according to claim 8, wherein

said step of transmitting the program information of said server program to said new server includes the step of

5 responsive to reception of a transmission request of the program information of said server program from said new server, transmitting the program information of said server program to said new server.

10. A method of distributing a program in a network gateway for distributing, to nodes connected to a network that in turn is connected to a data communication networks through the gateway, a program to be operated on each node, wherein

5 a program distribution site holding said server program and a client program necessary for communication with a server using said server program and having a function of distributing, upon request, a requested program to a node that issued said request is connected;

10 said method of distributing a program in a network gateway comprising the steps of:

preparing a management table storing management information for each of the nodes connected in said network;

15 receiving a program to be executed at a node connected to said network from a corresponding program distribution site and storing in a storage provided in association with said gateway;

detecting update of a program stored in said program distribution site, and updating the corresponding program stored in said storage with the new program stored in said program distribution site;

20 requesting update of said program, to that node which holds an old version of said updated program; and

responsive to reception of a transmission request of a program from that node which holds the old version of said updated program, transmitting the corresponding program stored in said storage to the node that has transmitted said transmission request.

11. The method of distributing a program in a network gateway according to claim 10, wherein

said step of updating with said new program includes the steps of detecting an update of a program, by making an inquiry as to

5 whether there has been an update of a program at said program distribution site periodically,
transmitting a transmission request of said updated program to said program distribution site, and
updating, by the program transmitted from said program
10 distribution site in response to said transmission request of said updated program, the corresponding program stored in advance in said storage.

12. The method of distributing a program in a network gateway according to claim 10, wherein said step of updating with said new program includes the steps of
responsive to reception of a notification that a program has been
5 updated from said program distribution site, transmitting a transmission request of said updated program to said program distribution site, and
updating, with the program transmitted from said program distribution site in response to said transmission request of said updated program, the corresponding program stored in advance in said storage.

13. A method of distributing a program using a network gateway, for distributing, to nodes connected to a network that in turn is connected to a data communication network through the gateway, a program to be
operated on each node, wherein
5 a program distribution site holding said server program and a client program necessary for communication with a server using said server program and having a function of distributing, upon request, a requested program to a node that issued said request, is connected to said large scale data communication network;
10 said method of distributing a program using a network gateway comprising the steps of:
preparing a management table storing management information for each of the nodes connected to said network;
receiving program information of a program to be executed by a node
15 connected to said network from a corresponding program distribution site,

and storing in a storage provided in association with said gateway;

detecting update of a program stored in said program distribution site, and updating the corresponding program information stored in said storage with the program information of the new program stored in said program distribution site; and

applying the program information of said new program to a node that holds an old version of said updated program, and requesting updating of said program; whereby

it becomes possible for the node holding the old version of said updated program to determine whether a program is to be newly received from said program distribution site, based on the program information received from said gateway.

14. The method of distributing a program using a network gateway according to claim 13, wherein

said step of updating with said new program information includes the steps of

detecting whether a program is updated or not, by making an inquiry as to whether the program is updated or not periodically to said program, distribution site,

transmitting a transmission request of the program information of the updated program to said program distribution site, and

updating, with the program information transmitted from said program distribution site in response to said transmission request of the program information of said updated program, the program information of the corresponding program stored in said storage in advance.

15. The method of distributing a program using a network gateway according to claim 13, wherein

said step of updating with said new program information includes the steps of

responsive to reception of a notification of an update of a program from said program distribution site, transmitting a transmission request of

the program information of said updated program to said program distribution site and

- 10 updating, with the program information of the program transmitted from said program distribution site in response to said transmission request of the program information of said updated program, the program information of the corresponding program stored in advance in said storage.